Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of:	)	
	)	
Spectrum Policy Task Force Seeks	)	DA 02-1311
Public Comment on Issues	)	ET Docket No. 02-135
Related to Commission's	)	
Spectrum Policies	)	

COMMENTS OF DOMINION RESOURCES, INC.

Dominion Resources, Inc. ("Dominion"), by counsel, hereby submits Comments in the above-referenced proceeding. In this proceeding, the Commission has asked for comment from industry as to whether the Commission's spectrum allocation, interference protection, international coordination, and public safety rules are providing entities with the necessary capability and protection to operate the radio networks they require. As a utility company with an expansive and complex communications system, Dominion knows first-hand many of the limitations and problems inherent in the Commission's current spectrum rules. Accordingly, Dominion respectfully submits these comments to urge the Commission to protect the nation's critical infrastructure by providing utilities with sufficient exclusive and protected spectrum, and to avoid promulgating rules that will force utilities to rely upon commercial providers for the provision of essential wireless services.

INTRODUCTION

Dominion, through various subsidiaries, serves nearly four million electric and natural gas customers across the East Coast and parts of the Midwest. Dominion generates electricity in Virginia, Connecticut, West Virginia, Pennsylvania, Illinois and Ohio from numerous facilities,

including: three nuclear power stations, six fossil fuel stations, three hydroelectric stations, and six combustion turbine sites. Combined, these facilities provide nearly 24,000 megawatts of power, which is transmitted over 6,000 miles of transmission lines. In addition, Dominion's customers are served by over 7,600 miles of transmission pipeline, 5.1 trillion cubic feet equivalent of natural gas reserves, and the nation's largest underground natural gas storage system with more than 950 billion cubic feet of storage capacity.

Businesses, government buildings, hospitals, schools, and homes all rely upon dependable electricity and natural gas provided by Dominion. When electric lines are down, or pipelines are ruptured, extreme care must be taken at every step in the repair process. Utility operation and repair involve inherent levels of danger--even in the best conditions. Dominion linemen work within facilities charged with hundreds of thousands of volts of electricity, and Dominion pipeline workers operate within close proximity to large amounts of highly explosive amounts of natural gas. During outages, linemen often work under the poorest possible conditions. Rain, hurricane and tornado force winds, and darkness turn everyday repairs into ultra-hazardous events. Operating under these conditions requires absolute reliability of communications for efficient restoration of service, as well as for the safety of linemen and the public.

The Dominion infrastructure is maintained and protected by thousands of employees using thousands of mobile radios and dozens of radio frequencies.[1] Currently, Dominion operates in the 48 MHz, 150 MHz, 450 MHz, 800 MHz, 900 Mhz, 2 GHz, 6 GHz, 10 GHz, and

[1] Dominion's radio system for its electric operations in the North Carolina and Virginia service territory includes approximately 4,100 mobile and portable radio units used to span the 32,000 square mile service territory. Dominion's radio system for gas operations covers a five-state region (West Virginia, Ohio, Pennsylvania, New York and Maryland) and includes approximately 2015 mobile and portable radio units and 152 fixed communications sites. In addition, Dominion's nuclear power plants each operate approximately 400 mobile radio units.

18 GHz bands. On numerous occasions spanning several years, however, Dominion's communications system has been compromised by interference caused both by congestion in shared bands, as well as by interference from cohabitants and neighboring users in other bands.

Many of these interference problems are the result of inadequate availability of new spectrum and general congestion in shared spectrum bands. Due to this lack of access to sufficient spectrum, Dominion has been forced to lease commercial wireless services in the 150 MHz, 800 MHz, 900 MHz, 1.5 GHz, and 1.9 GHz bands. Repeatedly, congestion in these commercial networks has made communications over such systems impossible, especially during times of emergency when reliable communication is of the utmost importance to Dominion, its employees, and customers.

DISCUSSION

I. The Commission Should Ensure That Utilities Receive Sufficient, Protected Spectrum.

The Public Notice asks, at question 9, whether more explicit protections are necessary to protect incumbents from harmful interference. Dominion believes that additional protections are needed from both in-band and out-of-band interference. In addition, Dominion believes that many of its interference concerns could be remedied by the Commission by providing utilities with additional amounts of exclusive spectrum.

A. Utilities Are Unable To Gain Access To Necessary Spectrum

The paramount spectrum concern of Dominion is that it be able to gain adequate amounts of spectrum, both now and in the future, and that this spectrum be protected from interference and congestion. As outlined above, Dominion's telecommunications network provides the backbone for virtually all of its energy production, transmission and distribution services.

Wireless services often provide the only reliable means of communication between workers in the field, and between those workers and central dispatching offices. Moreover, vast amounts of load measuring data and diagnostic information are sent over the air. This is especially true in mountainous and rural regions where wireline communications is impractical or impossible. In addition to these current spectrum demands, future technologies beneficial to utilities and their customers will require new amounts of radio spectrum.

In the future, and without critical changes made to the Commission's spectrum management and allocation rules, the dual problems of congestion and interference discussed below will worsen for Dominion and all other utilities as the number of users increases, and as those users increasingly rely on the finite spectrum for additional technologies and uses. By some estimates, the utility industry alone will require 6.3 MHz of additional bandwidth by 2010.[2] Dominion's future business plans in fact will require considerable amounts of additional spectrum as its telecommunications system is upgraded and modernized. In fact, Dominion already has been unable to gain access to various UHF band frequencies in urban areas for the provision of new technologies.

Given these needs, as well as a recent study by the National Telecommunications and Information Administration which notes that utilities do not have sufficient spectrum for current operations, and will be hamstrung in the future as those needs increase,[3] the Commission should consider what steps it can take to free spectrum for the exclusive use of utilities and other parts

[2] *See* Marshall W. Ross & Jeng F. Mao, "Current and Future Spectrum Use by the Energy, Water, and Railroad Industries: Response to Title II of the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 2001 Public Law 106-553," U.S. Department of Commerce, National Telecommunications and Information Administration (Jan. 30, 2002) at xxi (citing data provided by the Utility Spectrum Assessment Taskforce).
[3] Id.

of the Nation's critical infrastrucuture.[4] For example, the Commission could add utilities to the list of entities eligible for the Public Safety Pool, or it could create a new classification that would raise the priority of these vital services above that of standard business and industrial service pool users.

To date, the Commission has offered allocations in certain bands, such as the 700 and 800 MHz bands, for use by several entities, including utilities. Although Dominion supports these efforts as an important step in the process of providing utilities with adequate spectrum for their operations, these allocations are of little benefit to various utility operations in mountainous areas.

B. Without Dedicated Spectrum, Utilities Are Susceptible To Interference From Other Users In Shared Bands

At present, Dominion and other utilities are not provided access to sufficient exclusive spectrum. Further, the Commission has declined suggestions that it make further exclusive allocations.[5] Rather, the Commission has required utilities to coexist in limited bands of spectrum with a wide range of users. Over time, these bands have become more crowded and the noise floor has risen considerably, making dependable communications increasingly difficult along the Dominion network. As a result, the Dominion network is increasingly compromised, especially in times of emergency when spectrum activity increases.

For example, in Cleveland, Ohio, Dominion operations share spectrum with ambulance services. As a result, when these ambulance services use these bands, Dominion's

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[4] In Executive Order 13010 (1996), President William J. Clinton recognized that "certain national infrastructures are so vital that their incapacity or destruction would have a debilitating impact on the defense or economic security of the United States." Included in this critical infrastructure is "electrical power systems" and "gas and oil storage and transportation" systems, such as those operated by Dominion.

[5] *See, e.g.,* Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands, *Report and Order*, WT Docket No. 02-8 (rel. May 24, 2002) (declining to provide utility telemetry exclusive spectrum).

communications system is compromised. And in West Virginia, where Dominion operates a radio communications network at 48.7 MHz, the presence of another licensee, Ashland Oil, makes dependable use of the band almost impossible, thus complicating regular pipeline maintenance and pigging operations which are essential to the function of Dominion's natural gas business. In these areas, Dominion has no option but to use wireless services. Cellular operations, for example, do not provide Dominion the ability to operate multiple radio units on the same channel to allow constant communications. Moreover, the locations of the majority of these types of operations are in areas where cellular coverage is not comprehensive.

Congestion is even more troublesome in areas, such as Dominion's natural gas operations, where Dominion relies on the use of spectrum for the transmission of essential loading, trending, and diagnostic data. Because of the wide amount of spectrum needed for such data transmission, the crowding of the spectrum can often completely disrupt the transmission of this information. In the past, where users clogged the spectrum during emergency conditions in Dominion's gas service territory, Dominion was unable to send diagnostic information critical to continuing operations in the area.

C. Without Adequate Protection, Utilities Are Subject To Interference From Neighboring Users

In addition to this increasing level of ambient noise and congestion caused by cohabitants in shared spectrum, Dominion continues to experience increasing levels of interference from users in adjacent bands. The Commission should consider steps to guard these bands from out-of-band interference.

II. The Commission Should Avoid Over-Reliance On Commercial Solutions

The Public Notice asks, at question 22, what mechanisms the Commission should employ to ensure the reliability of dependable and interoperable communications services for the Nation's critical infrastructure, such as utilities. Dominion suggests that one such method is to remove the reliance of this critical infrastructure on often unreliable commercial providers of wireless telecommunications services. To that end, Dominion urges the Commission that, should it heed Dominion's call for the provision of additional spectrum for utilities as made above, the Commission also should avoid auctioning such spectrum to the highest commercial bidder. Reliance on commercial providers of wireless services is not a feasible option for Dominion, or any other utility that seeks to protect the reliability of its system. Dominion therefore requests that the Commission continue to pursue options of making spectrum available for critical infrastructure like utilities, and to avoid auctioning such spectrum to non-vital, commercial providers.

As discussed above, emergency weather conditions precipitated by hurricanes, tornadoes, and severe storms pose unique challenges to Dominion. It has been Dominion's experience that, during these times of crisis, the reliability of commercial providers of, for example, cellular service, has been far less reliable than Dominion's own telecommunications system. In the winters of 1996 and 1998, for example, when wide swaths of Dominion's territory were ravaged by ice storms and high winds, most cellular sites were inoperable. Similarly, during Hurricane Floyd, commercial cellular networks were rendered unusable. Yet, Dominion's system continued to work, albeit in congested bands.

Non-weather related crises cause similar problems. In 1994, when US Airways Flight 427 crashed near Dominion's Hopewell, Pennsylvania office, cellular networks were clogged by

large spikes in usage by people in the area. Had Dominion relied upon commercial providers, its operations would have been crippled.[6]

The geographic coverage of most commercial providers is also inadequate for Dominion's telecommunications needs. Generally, commercial providers of communications systems tend to deploy the majority of their networks in urban areas where the majority of their potential or existing customers reside. Thus, in rural areas, or in areas where the lease of wireless services is not profitable, commercial carriers fear to tread. Yet, Dominion operates in these areas and needs reliable communications.

Finally, Dominion has reservations regarding the financial stability of commercial providers of wireless services. As recent telecommunications company failures have shown, customers may have service ended with little, if any, notice. The safety of Dominion's network and its employees, and the related reliance of Dominion's customers, should not be left to the whimsy of commercial providers and their unilateral decision as to whether to continue to provide service.

III. The Commission Should Encourage More Expedient International Coordination

The Commission asks, at question 28 of the Public Notice, for ways it can improve coordination processes with Canada. In Dominion's experience, the primary coordination problem with Canada has been the considerable delay involved with the coordination of frequencies above Line A. For example, on January 22, 2002, Dominion filed with the Commission a modification of an existing license above Line A. The Commission forwarded the

[6] Dominion notes that part of this problem could be solved if the Commission would require commercial providers to form a user priority system for emergency or disaster scenarios.

application for modification to Canada the next day. Canada, however, required an additional *five months* to approve the modification, granting such approval in June of 2002.

Also in January of 2002, Dominion applied for new licenses to frequencies located above Line A. Although the Commission forwarded Dominion's application to the Canadians two days later, Canadian frequency coordination again took almost five months, when, in the end of May, Dominion's application was returned for its potential to cause interference. Dominion resubmitted its application to the Commission, offering thorough engineering analysis rebutting the Canadians' conclusion. Again, the application awaits action by the Canadians.

These delays hinder Dominion's ability to operate fully its telecommunications system. Accordingly, Dominion asks the Commission to encourage international coordinators to follow the Wireless Telecommunications Bureau's customer service standards which promise expedient service of license applications.

CONCLUSION

Like most utilities, Dominion relies heavily on its private radio license network. As more users enter the spectrum, however, the reliability of this network declines. At the same time, Dominion seeks to implement new and better services for its customers that will require additional amounts of spectrum. This need for additional spectrum cannot be met by often unreliable commercial providers. Rather, the Commission should consider making dedicated and protected allotments of spectrum to members of the Nation's critical infrastructure, including electric and gas utilities.

Respectfully submitted,

/s/ Raymond A. Kowalski

Raymond A. Kowalski
Eric J. Schwalb
TROUTMAN SANDERS LLP
401 Ninth Street, N.W., Suite 1000
Washington, DC 20004-2134
(202) 274-2950 (telephone)
(202) 274-2994 (fax)

John D. Sharer
DOMINION RESOURCES
SERVICES, INC.
Law Department - PH-1
P.O. Box 26532
Richmond, VA 23261-6532
(804) 819-2271 (telephone)
(804) 819-2183 (fax)

Attorneys for Dominion Resources Inc.